

“Tritonshornschnecke (*Charonia* Nob.; sonst: *Tritonium*).” Then follows a generic diagnosis and there is given a description of the species “*Ch. tritonis* Nob.”

I conclude then, if no name exists prior to Gistel, 1848, that *Charonia* Gistel should be the generic name to be used for *Murex tritonis* Linné.

Two further points require notice: To those unable to refer to Gistel a second *Charonia* might prove troublesome, as on p. 178 with a quaint carelessness he proposes *Charonia* for an *Acaleph*.

The family name to be used for the *Tritons* I would suggest should be *Cymatiidæ*, based upon the oldest genus name in the family. Basing the family name upon the supposed typical genus seems a quite unscientific method, as so much would depend upon the personal equation; speaking for myself I would have considered *Murex tritonis* Linné, a quite atypical member of the family, glancing over the whole of the molluscs at present associated in it.

THE UNIONE FAUNA OF THE GREAT LAKES.

BY BRYANT WALKER, SC. D.

(Continued from page 47.)

IV.

From what has already been said, it would seem to be clear that there is not any possibility that the present fauna of Lake Erie could be a relict fauna that persisted there during the glacial period. The entire region was covered by the ice and the entire configuration of the land was overwhelmed, blotted out, and the system of drainage was entirely changed by the drift deposited on the retreat of the ice. That under the enormous thickness of the ice cap throughout that entire area, there could have been any survival of a Naiad fauna seems absolutely impossible. But there are other facts, which show that the representatives now found in the Great Lake region of the Mississippi and Ohio faunas, are the results of a post-glacial invasion and that the modifications that have taken place in their size, shape, and appearance have been brought about by environmental changes since glacial times. The entire Lower Peninsula of Michigan was in the glaciated area. If the present fauna of that area has been derived from a survival in the Great Lakes, or in

any of the pre-glacial streams of that region, of the pre-glacial fauna, and not from a post-glacial invasion from the south, it would seem a necessary result that the Unione fauna of the entire region should be to-day of the same general character, and that the peculiarities of the present Lake Erie fauna should be also characteristic of the same species as found in the interior waters of the State. But that is not the fact. The differentiation that has occurred is entirely in the race which is found in the colder waters of the Great Lakes. In the warmer waters of the interior of the State, the species attain the same size, the same luxuriance of growth and the same color that they do at the present time in the Mississippi and Ohio valleys. In other words, the interior waters of the Lower Peninsula of Michigan are inhabited by the typical forms of these species just as clearly and as certainly as the examples found in the Great Lakes are peculiarly modified into what is known as the Great Lake forms.

Thus, for example, the Great Lake form of the species known as *Lampsilis recta* is depauperate, and standing by itself, would seem to be specifically different from the typical form. It was described as a distinct species under the name of *sageri* by Conrad. But in the Rouge River, less than ten miles from Detroit River, and in the Clinton River, at Mt. Clemens, at no greater distance from Lake St. Clair, examples of this species are typical in every respect, and are as large and heavy as the average specimens from the Ohio and Mississippi valleys. The same is true of nearly every species now represented in the peculiar fauna of the Great Lakes. That being the case, it is obvious that either one of two things must be true. There has been no natural connection between the St. Lawrence region and the Ohio Valley since the Maumee outlet of the post-glacial Lake Erie was cut off by the retreat of the ice and the establishment of another outlet at a lower level. If the present Lake Erie fauna was the survival of the pre-glacial fauna of that region, then the interior of the State must have been populated by migration upstream from the relict fauna of the Great Lakes, and it hardly seems possible if that were true, that the subsequent modifications of these species from the Great Lake form consequent upon their introduction to a different environment, warmer water, and more abundant food, should have been directly back to and exactly coincident with the typical form as found in the regions south of the glaciated area. On the other hand, if that is not so, the

only alternative is that the present Lake Erie fauna was derived from an immigration of the typical forms from the south, and that where these immigrants obtained a foothold in the interior waters of the State, where the local conditions were substantially the same as those in the Ohio Valley, they retained their characteristic form, while such individuals of this invasion as remained in the Great Lakes and were subject to the peculiar influences of that environment, became modified by it with the result, as shown by the present conditions, of a varietal, but not a specific, differentiation.

In conclusion, the deductions that would seem to naturally result from the foregoing discussion are these:

1. That the Atlantic fauna originated from a very early pre-glacial invasion from the west, probably in late cretaceous or early tertiary times.

2. That the present extension of the Atlantic fauna towards the northwest was the result of an invasion from the west, in post-glacial times, most probably through the Mohawk and Trent outlets into Georgian Bay, and from thence into Lake Superior.

3. That the present existence of so large a representation of the Mississippian fauna in Lake Erie is to be ascribed to a post-glacial invasion from the Mississippi Valley through the Maumee outlet into the post-glacial Lake Maumee.

4. That the original pre-glacial fauna of the present St. Lawrence system was absolutely exterminated during the glacial period, and that the peculiar fauna now characteristic of Lake Erie is the result of the modification from environmental causes of the post-glacial immigrants from the south, and not the result of any survival in that region of any part of the pre-glacial fauna.

NOTE.—By an error on the part of the type-writer, *Ptychobranchus phaseolus* Hild. was omitted from the list of the Lake Erie species on p. 22. It was included in the original draft of the paper and is necessary to complete the tally of "thirty species" peculiar to that lake mentioned on p. 23. It is an abundant species at the western end of the lake, but dwarfed like most of the fauna.

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MARINE SHELLS FROM DRIFT ON UPPER MATECUMBE KEY, FLORIDA.

BY JOHN B. HENDERSON.

In May last while cruising down the Florida keys in the "Eolis," Mr. Simpson, Mr. Clapp and I went ashore on Upper Matecumbe for an assault upon the land shells. Returning along the beach we observed a little sheltered cove, wherein the usual line of small drift shells appeared to be exceptionally rich. We scooped up a pill-box full—containing about the measure of an ordinary tablespoon—of this rubbish. The appended list of species therein contained may be of interest. The presence of *Pyrazus milium* Dall is noteworthy, as this little *Cerithium* has only recently been described from the Pleistocene of Panama. The *Sayella crosseana* Dall is also interesting. This specimen is perfect, of a rich chestnut-brown, and greatly resembles a miniature *Obeliscus* from Cuba. There are some other species in the lot, but the shells are too young or worn for positive identification.

Rissoina chesnelli Mich.
 Rissoina laevigata C. B. Ad.
 Rissoina decussata Montagu.
 Rissoina cancellata Philippi.
 Alvania lipeus Dall.
 Litiopa bombyx Kiener.
 Caecum floridanum Stimp.
 Caecum cooperi Smith.
 Meioceras nitidum Stimp.
 Seila terebralis C. B. Ad.
 Cerithium variabilis Ad. (small
 race).
 Pyrazus milium Dall.
 Triforis nigrocinctus C. B. Ad.
 Bittium varium Pfr.
 Mangilia biconica C. B. Ad.

Crepidula fornicata L. (young).
 Acmaea punctulata pulcherrima
 Guild.
 Siphonaria alternata Say
 (young).
 Phasianella pulchella Orb.
 Neritina viridis Lam.
 Neritina virginea L. (young).
 Ischnochiton papillosus Ad.
 Eulima gracilis C. B. Ad.
 Pedipes mirabilis Muhlf.
 Actaeon punctostriatus C. B.
 Ad.
 Tornatina canaliculata Say.
 Tornatina candei Orb.
 Truncatella bilabiata Pfr.